Syllabus: Math 739

Tuesday/Thursday 1:30-2:45, KH 253
Professor: Goldin
Office: Science and Tech I, Room 207
Office Hours/Location: Tuesdays/Thursdays 2:45-3:45, and by appointment
Contact Information: EMAIL IS BEST: rgoldin@gmu.edu

Course Description: This is an introductory course in differential geometry. The prerequisites include MATH 621, MATH 631, and MATH 685. If you have not had these courses, please speak to me within the first week of classes. We will cover the following topics, subject to time constraints

- Smooth manifolds, submanifolds
- Diffeomorphisms and other maps of manifolds
- Vector fields
- Vector bundles, including tangent and cotangent bundles.
- Lie groups and group actions
- Tensor algebra and differential forms
- Riemannian metrics and symplectic forms
- de Rham cohomology

The book for the course is Smooth Manifolds by John M. Lee. We will follow many aspects of the book (though not all), and the problem sets will come mostly from the book. If you have seen the book, you know we will not be covering the whole book but rather select chapters and sections.

Course activity: There will be approximately 10 problem sets given over the semester. There will be one mid-term exam immediately following spring break, and a final exam. Depending on class sentiment, one or both of these exams may be take-home.

Grade: The grade in this course will be evaluated as follows. Students will earn the *higher* of

Problem Sets: 50%
Midterm Exam: 20%
Final Exam: 30%

Problem Sets: 70%
Midterm Exam: 15%
Final Exam: 15%

Problem Sets: 60%
Final Exam: 40%